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A NEW SEA STAR OF THE GENUS PORANIOPSIS FROM JAPAN

By Walter K. Fisher

The new species of *Poraniopsis* (Echinasteridae) described herein was known to me 30 years ago. It was found in a jar containing fishes dredged off Honshu, Japan, by the *Albatross* in 1906. The genus is an isolated one with a rather curious distribution. First, there is the present Japanese species, the extent of whose range is unknown. *P. inflata* (Fisher) has been dredged from off Oregon to San Diego, Calif., in 26 to 159 fathoms. *P. inflata flexilis* Fisher is a deeper-water race (344 to 600 fathoms) from California, and probably extends to the Gulf of Panama, 458 fathoms. The latter record is based on *Alexandraster mirus* Ludwig, 1905, which is doubtfully distinct. *Poraniopsis mira* (Ludwig) is untenable on account of *Poraniopsis mira* (de Loriol) described a year prior as *Lahillea mira*. In the Magellanic region is found *P. echinaster* Perrier, type of the genus, its range extending to Gough Island south of Tristan da Cunha, 50 to 70 fathoms. I have examined a specimen from this locality and it is *P. echinaster* rather than *P. capensis* H. L. Clark, from Cape Colony, 160 to 230 fathoms. Finally, there is *P. mira* (de Loriol) from the Gulf of San Mathias, Argentina, very distinct from *P. echinaster*.

Genus PORANIOPSIS Perrier

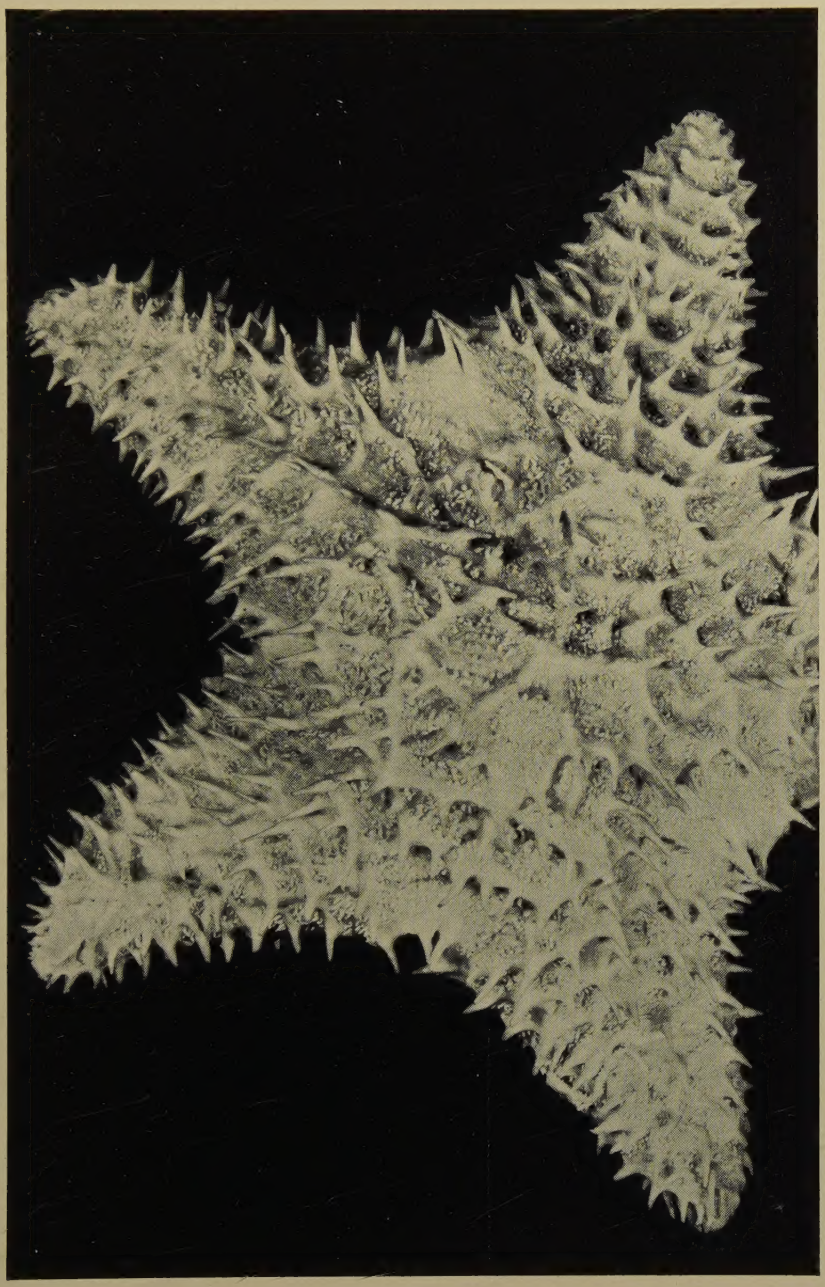
PORANIOPSIS JAPONICA new species

FIGURE 56; PLATES 55, 56

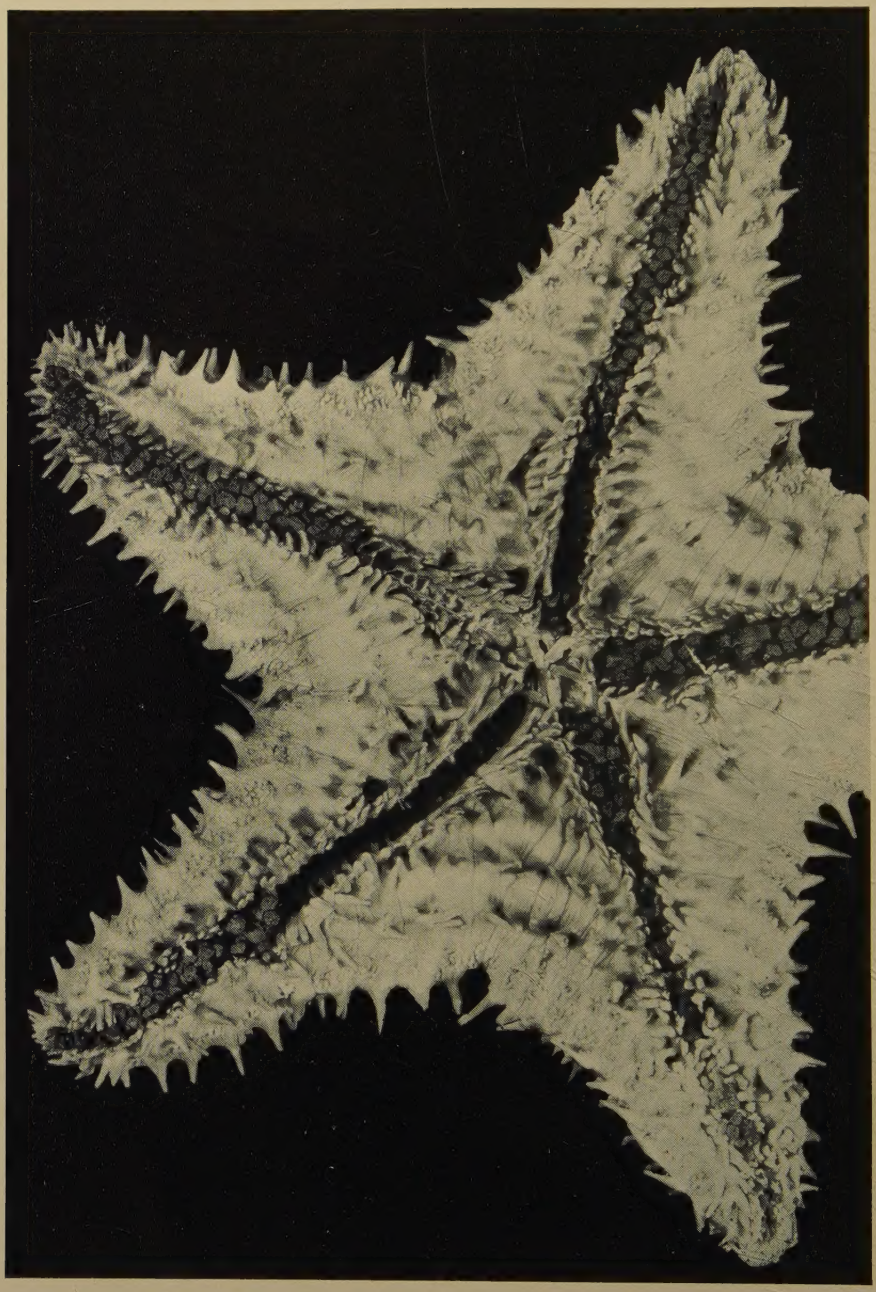
Poraniopsis sp. FISHER, U. S. Nat. Mus. Bull. 76, pt. 1, p. 264, 1911 (off Honshu, Japan, 182 fathoms).

Diagnosis.—Differing from *P. inflata* (Fisher) in having a larger disk, rays broader at base, a decidedly broader abactinal area with more numerous abactinal spines, numerous delicate thorny spinelets immersed in the thick membrane of papular areas, more widely spaced inferomarginal spines, adambulacral spines without well-marked groove. R=77 mm, r=38 mm, R=2r, br=40 mm.

Description.—When the animal is viewed directly from above the superomarginal series of spines curves downward on the sides of ray and marks the border of the actinal area. In *inflata* it is higher on side of ray and fairly straight. As a result the abactinal area is broader in *japonica.* Including the first superomarginal spine of each side, one can count 10 to 12 spines across base of ray, whereas in *inflata* the number is 5 to 8. This means that the dorsolateral spines are more numerous in *japonica;* and as the photograph shows, neither they nor the median radial spines form regular longiseries. These spines are about as long as in *inflata* of comparable size, that is, from 3 to 6 mm, the apparent height being somewhat enhanced by the central convexity of the lobed plate upon which they stand. The skeleton forms well-marked rounded ridges connecting the spines and outlining the large papular areas with their papulae. The skin is rather thicker than in *inflata* and is traversed by numerous anastomosing channels. On the papular areas are low dermal papillae smaller than the papulae, in which are delicate, slender spinelets with thorny sharp projections all along the sides. These spinelets are 0.4 to 0.55 mm long and 0.15 mm thick including thorns, which are 0.027 mm long. These are in the outer layer of the integument. Usually independent of the dermal spinelets, in a lower layer of the integument, are more numerous small plates, 0.12 to 0.6 mm in diameter. The smallest are scarcely more than 3 tiers of very open irregular meshwork, but the largest are thick and opaque under high power. It may be that the thorny spinelets were originally connected each with a platelet and became dissociated by a swelling of the dermis in alcohol, but there are more platelets than spinelets. The latter resemble the dermal spinelets of *Porania glabra* Sladen and may prove to be as variable in number as in that species. They have not been detected in *inflata* and *echinaster* but immediately suggest the thorny dermal spinelets of *Poraniopsis mira* (de Loriol).



PORANIOPSIS JAPONICA, NEW SPECIES.
Abactinal surface of type. Slightly larger than natural size.



PORANIOPSIS JAPONICA, NEW SPECIES.
Actinal surface of type. Slightly larger than natural size.

In this species, from Argentina, the spinelets are larger and thicker, the length being 2.5 times the thickness, while the thorns are relatively smaller (de Loriol, 1904, pl. 3, fig. 1*h*).

The convex madreporite is 4.5 mm on the interradial (longer) diameter, is guarded by 4 spines, and its inner border is at the middle of r.

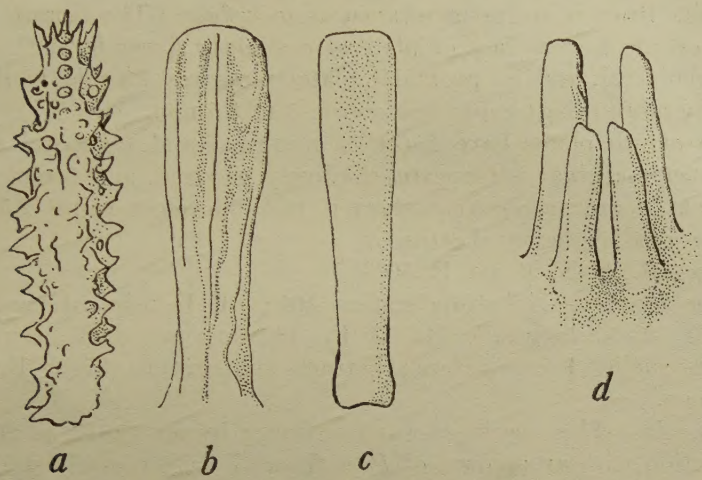


FIGURE 56.—*Poraniopsis japonica*, new species: *a*, Dermal spinelet from abactinal papular area, × 100; *b*, outer of the two adambulacral spines, with its sheath, or sacculus, showing the outer face or that away from the ambulacral furrow, × 10; *c*, same spine as *b*, with sheath removed, × 10; *d*, fifth and sixth adambulacral plates and spines viewed from furrow and showing the sides opposite to *b*, × 5.

The broad intermarginal papular areas, 12 to a side, are actinal in position, becoming lateral sometimes at end of ray. The proximal areas contain the dermal spinelets. Interradially, the distance between the first superomarginal and corresponding inferomarginal spines is one-third r. Superomarginal spines 13, spaced about their own length. The proximal 1 to 5 inferomarginal plates carry a single spine, the others 2 spines except for 1 or 2 triplacanthed plates at midray and a sporadic monacanthed plate near the end; 15 plates in all. The superomarginal spines taper from a broad base to a rather slender blunt point. The inferomarginals are similar, although the tip is sometimes compressed, rounded or incipiently bifid but not markedly channeled. Intermarginal spines at base of ray for the 10 areas are: 1, 1, 0, 1, 0, 2, 0, 1, 1, 2.

Actinal interradial areas with 20 to 23 prominent spines, there being a well-defined arcuate series similar and parallel to the inferomarginals, the outermost spinelet at about middle of ray measured on side. Inside of this an incomplete second series is indicated, which in number and arrangement is not materially different from

that of *inflata* except that the spines are not grooved and have a somewhat heavier sheath.

The adambulacral spines are narrowly spatulate, with subparallel sides, rounded tip, and sometimes a slight concavity of the terminal part but not a marked groove. The rather thick sheath, however, has a well-marked groove for the whole length of the outer side, but the spine itself is not gouge-shaped as in *inflata*. The furrow spine is set on the furrow face of plate at a slightly lower level than the subambulacral, and on proximal plates measures 4.5 mm while the slightly more robust subambulacral is 5 to 5.5 mm.

The mouth plates have 4 (or 3) marginal and 1 suboral spine; the inner marginal is truncate, shallowly grooved, and 5 mm long; the next 3 are successively shorter, the outermost being 2.5 mm. All have rather heavy sheaths.

Type.—U. S. N. M. no. E. 5603.

Type locality.—*Albatross* station 5049, off Honshu, Japan, latitude 38°12′ N., longitude 142°02′ E.; 182 fathoms; dark gray sand, broken shells, Foraminifera; bottom temperature 37.8° F.; one specimen.

Remarks.—This specimen was mentioned by me (1911, p. 264) in connection with an account of *P. inflata*. I have recently studied a specimen of *P. echinaster* Perrier from Gough Island. This specimen lacks any trace of dermal spinelets. It has numerous perforated embryonic plates much smaller and simpler than those of *inflata* and comparable to the first stages of the platelets of *japonica*. *P. echinaster* has 2 inferomarginal spines over part of the ray, very few actinal spines, while the adambulacral spines (occasionally 3) are flattened, spatulate, and not grooved. *P. capensis* H. L. Clark is probably only a race of *echinaster*. *P. mira* (de Loriol),[1] from Gulf of San Mathias, Argentina, differs in having shorter tubercular abactinal spines often with a capitate tip, and, in addition to the spines, the surface of body is covered by a multitude of almost microscopic thorny spinelets, larger and much more numerous than those in *japonica*.

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[1] *Lahillen mira* de Loriol, 1904, p. 32, pl. 3, figs. 1–1g.

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